

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

The claims have been amended to more clearly recite the distinguishing features of the present invention, as well as to make some minor grammatical improvements and to correct some minor antecedent basis problems so as to put the claims in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTION

Claims 1-39 were all rejected under 35 USC 102 or under 35 USC 103 as either being anticipated by USP 6,462,838 ("Hirata et al"), or as being obvious in view of the combination of Hirata et al with one or more of USP 5,600,404 ("Ryo Ando et al"), USP 6,898,381 ("Yoichiro Maebashi et al") and other "well known" prior art. These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

According to the present invention as recited in claim 1, an image forming apparatus is provided which comprises an image

forming unit for forming a correcting image for correcting gradations of an output image, on a bearing body, a sensor for measuring a reflected light quantity of the correcting image formed on the bearing body, and a gradation correcting unit for correcting the gradations of the output image, based on a measurement result of the measured reflected light quantity of the correcting image. In addition, according to the present invention as recited in amended claim 1, a timing correcting unit is provided for detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on the measurement result by the sensor, and for correcting the detected shift of the measurement timing, wherein the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit.

Hirata et al discloses an image forming apparatus having AIDC sensors 37 which are photosensors for detecting the image densities of the AIDC patterns 90 (Fig. 12) corresponding to test patterns, and a sensor 36 which detects color misregistration (see column 5, lines 11-25). It is respectfully submitted, however, that Hirata et al fails to disclose a technique for correcting measurement timing at which the AIDC patterns are measured by the AIDC sensors 37.

On pages 3-4 of the Office Action, the Examiner appears to recognize a correction of the misregistration as a correction of the measurement timing to measure the image densities of the AIDC patterns on the basis that the sensor 36 and the AIDC sensors 37 work in tandem to correct the gradation of an image according to the misregistration detected and gradation density patches dispersed on the belt.

However, the sensor 36 and the AMC sensors 37 of Hirata et al do not operate in conjunction with each other. As disclosed at column 5, lines 16-17 and column 8, lines 47-54 of Hirata et al, signals developed by the sensor 36 are used for correcting the position and/or distortion of an image, and deviations of C, M, and Y from K are detected in a test conducted with a test pattern for detecting the misregistration. An expansion or reduction ratio distorted in the main scanning direction, a data signaling rate distorted in the subscanning direction, and a skew distortion are corrected by gradation level interpolation based on the detected deviations. By contrast, the AMC sensors 37 detect the image densities of the AIDC patterns 90, and data for correcting the gradation is set.

Thus, in Hirata et al, an object detected by the sensor 36 and objects detected by the AIDC sensors 37 are totally different from each other. And much the same is true on objects for correction. Therefore, the operation of the sensor 36 and the

operations of the AIDC sensors 37 have nothing to do with each other.

On the other hand, according to the present invention as recited in amended independent claim 1, the gradation correcting unit corrects the gradations of the output image using the measurement result of the gradation correcting image by the sensor which is measured at the timing corrected by the timing correcting unit.

Hirata et al does not at all disclose, teach or suggest correcting the gradation of an image using a measurement result of a gradation correcting image which is measured at the corrected timing, as according to the present invention as recited in amended independent claim 1.

Accordingly, it is respectfully submitted that amended independent claim 1 and claims 2-12 depending therefrom all clearly patentably distinguish over Hirata et al under 35 USC 102 as well as under 35 USC 103.

With respect to the present invention as recited in amended independent claim 15, moreover, it is respectfully pointed out that the timing correcting unit corrects timing of measuring the image to be detected based on the detected timing shift, and the control unit determines a measured value which is measured by the sensor at the corrected timing as a measured value of the image to be detected.

As pointed out hereinabove, Hirata et al does not disclose, teach or suggest correcting timing at which the AIDC patterns are measured by the AIDC sensors 37, and thus Hirata et al also does not disclose, teach or suggest the control unit of the present invention as recited in amended independent claim 15.

Accordingly, it is respectfully submitted that amended independent claim 15 and claims 16-21 depending therefrom all also clearly patentably distinguish over Hirata et al under 35 USC 102 as well as under 35 USC 103.

With respect to Ando et al, moreover, it is noted that this reference discloses a technique for selecting a specific pattern image of a single color among specific pattern images of a plurality of colors as a reference pattern image, and calculating deviations of the specific pattern images of the other colors from the reference pattern image. This technique aims at color registration when forming a color image, and is similar to the technique disclosed by Hirata et al for correcting the color misregistration. It is respectfully pointed out, however, that the correction of the misregistration does not correspond to the correction of the measurement timing, as discussed above.

In addition, it is respectfully submitted that neither Hirata et al nor Ando et al discloses, teaches or suggests correcting the timing of measuring a correcting image and correcting gradations of an output image using a measurement result which is measured at a

corrected timing, as according to the present invention as recited in amended independent claims 13 and 14.

Accordingly, it is respectfully submitted that amended independent claim 13 and 14 patentably distinguish over the combination of Hirata et al and Ando et al under 35 USC 103, even taking into account other other "well known" prior art.

Still further, it is respectfully submitted that the amended method claims also patentably distinguish over the cited references for the same reasons discussed hereinabove with respect to the amended apparatus claims.

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In view of the foregoing, entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,

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